Appl. No. : **09/489,588**
Filed : **January 21, 2000**

PROPOSED AMENDMENTS TO THE CLAIMS

1-28. (Cancelled)

29. (Currently amended) ~~The biological fluid measuring device of claim 1~~ A device for measuring glucose in a biological fluid, comprising:

a) a housing comprising an electronic circuit and at least two electrodes operatively connected to said electronic circuit; and

b) a sensor operably connected to said electrodes of said housing, said sensor comprising an apparatus for determining the amount of glucose in a biological sample, said glucose determining apparatus operably associated with said electrodes and comprising a membrane impregnated with an oxidase, a bioprotective membrane substantially impermeable to macrophages, said bioprotective membrane positioned more distal to said housing than said oxidase impregnated membrane, and an angiogenic layer, said angiogenic layer positioned more distal to said housing than said bioprotective membrane, wherein said sensor protrudes from said housing.

30. (Currently amended) The biological fluid measuring device of claim ~~1~~ 29, wherein the sensor further comprises a sensor interface dome.

31. (Currently amended) The biological fluid measuring device of claim ~~1~~ 29, wherein said membrane impregnated with oxidase comprises a resistance layer, an enzyme layer, an interference layer and an electrolyte layer.

32. (Currently amended) The biological fluid measuring device of claim ~~4~~ 31, wherein said resistance layer comprises a polymer membrane with a oxygen-to-glucose permeability ratio of approximately 200:1.

33. (Currently amended) The biological fluid measuring device of claim ~~4~~ 31, wherein said interference layer comprises a hydrophobic membrane substantially permeable to hydrogen peroxide.

34. (Currently amended) The biological fluid measuring device of claim ~~4~~ 31, wherein said interference layer comprises a hydrophobic membrane substantially impermeable to chemical compositions having a molecular weight substantially greater than hydrogen peroxide.

35. (Currently amended) The biological fluid measuring device of claim ~~4~~ 31, wherein said electrolyte layer comprises a semipermeable hydrophilic coating.

36. (Currently amended) The biological fluid measuring device of claim ~~8~~ 35, wherein said electrolyte layer comprises a curable copolymer of a urethane polymer and a hydrophilic film-forming polymer.

37. (Currently amended) The biological fluid measuring device of claim ~~1~~ 29, wherein said bioprotective membrane comprises at least one of polypropylene, ~~or~~ polysulphone, polytetrafluoroethylene, and poly(ethylene terephthalate).

38. (Currently amended) The biological fluid measuring device of claim ~~1~~ 29, wherein said bioprotective membrane further comprises pores having a diameter of about 0.4 μm.

39. (Currently amended) The biological fluid measuring device of claim ~~1~~ 29, wherein said angiogenic layer is selected from the group consisting of hydrophilic polyvinylidene fluoride, mixed cellulose esters, polyvinyl chloride, polypropylene, polysulphone and polymethacrylate.

40. (Currently amended) The biological fluid measuring device of claim ~~1~~ 29, further comprising c) a securing element for securing said device to biological tissue, said securing element composed of a material selected from the group consisting of polyester, polypropylene cloth, polytetrafluoroethylene felts and expanded polytetrafluoroethylene.

41. (Currently amended) The biological fluid measuring device of claim ~~13~~ 40, wherein said securing element comprises a polyester velour.

42. (Currently amended) The biological fluid measuring device of claim ~~1~~ 29, wherein said housing comprising said electronic circuit is filled with material comprising waxes and resins wherein said waxes and resins secure said electronic circuit within said housing.

43. (Cancelled)

44. (Currently Amended) An implantable glucose monitoring device of claim ~~43~~ 47, wherein said bioprotective membrane comprises pores, said pores having diameters ranging from about 0.1 micron to about 1.0 micron.

45. (Currently Amended) An implantable glucose monitoring device of claim ~~43~~ 47, wherein said bioprotective membrane comprises polytetrafluoroethylene.

46. (Cancelled)

47. (Currently amended) ~~An implantable glucose monitoring device of claim 46~~ A wholly implantable glucose monitoring device, comprising:

a) a housing of size and configuration for whole implantation into a host; and

b) a sensor supported by said housing for communication with tissue of said host, said sensor capable of continuous glucose sensing comprising (i) a member for determining the amount of glucose in biological fluid of said host, and (ii) a bioprotective member disposed more distal to said housing than said glucose determining member and including a bioprotective membrane that is substantially impermeable to macrophages and permeable to glucose and oxygen; and

c) a member for securing the device to biological tissue of said host, said securing member cooperatively associated with said housing, and wherein said securing member comprises poly(ethylene terephthalate).

48. (Currently amended) An implantable glucose monitoring device of Claim ~~43~~ 47, wherein said glucose determining member comprises a membrane containing glucose oxidase, said glucose oxidase-containing membrane positioned more proximal to said housing than said bioprotective member.

49. (Currently amended) An implantable glucose monitoring device of Claim ~~43~~ 47, wherein said device further comprises at least two electrodes supported by said housing and operably connected to said sensor.

50. (Previously added) An implantable glucose monitoring device of Claim 49, wherein said device further comprises electronic circuitry operably connected to at least one of said electrodes and adapted for continuous, long-term operation.

51. (Currently amended) An implantable glucose monitoring device of claim ~~43~~ 47, said housing including a cavity contained therewithin.

52. (Previously added) An implantable glucose monitoring device of claim 51, wherein said sensor is within said housing cavity.

53. (Cancelled).

54. (Currently amended) The biological fluid measuring device of claim ~~53~~ 57, wherein said bioprotective membrane is substantially impermeable to macrophages.

55. (Currently amended) The biological fluid measuring devise of claim ~~53~~ 57, wherein said bioprotective membrane comprises pores, said pores having diameters ranging from about 0.1 micron to about 1.0 micron.

56. (Currently amended) The biological fluid measuring device of claim ~~53~~ 57, wherein said bioprotective membrane comprises polytetrafluoroethylene.

57. (Currently amended) ~~The biological fluid measuring device of claim 53~~ A biological fluid measuring device, comprising:

(a) a housing comprising an electronic circuit and at least two electrodes operably connected to said electronic circuit; and

(b) a sensor operably connected to said electrodes of said housing, said sensor comprising (i) a bioprotective membrane, and (ii) an angiogenic layer, said angiogenic layer positioned more distal to said housing than said bioprotective membrane, wherein said angiogenic layer comprises polytetrafluoroethylene.

58. (Currently amended) The biological fluid measuring device of claim ~~53~~ 57, further comprising (c) a member for securing said device to biological tissue, and securing member associated with said housing.

59. (Previously added) The biological fluid measuring device of claim 58, wherein said securing member comprises poly(ethylene terephthalate).

60. (Currently amended) The biological fluid measuring device of claim ~~53~~ 57, wherein said sensor further comprises a member for determining the amount of glucose in a biological sample.

61. (Previously added) The biological fluid measuring device of claim 60, wherein said glucose determining member comprises a membrane containing glucose oxidase, said glucose oxidase-containing membrane positioned more proximal to said housing than said bioprotective membrane.

62. (Currently amended) The biological fluid measuring device of claim ~~53~~ 57, wherein said housing further comprises an apparatus operatively connected to said electronic circuit for transmitting data to a location external to said device.

63. (Cancelled)

64. (Currently amended) The device of claim ~~63~~ 66, wherein said wholly implantable device is sized and configured for being wholly implanted subcutaneously.

65. (Cancelled)

66. (Currently amended) ~~The device of claim 65,~~ A device for measuring glucose in a tissue of a host comprising:

a wholly implantable device comprising a sensor capable of continuous glucose sensing,

said sensor having an interface tip for communicating with the tissue of said host, said tip comprising a fixation domain adapted for substantial fixation of said tip in a foreign body capsule, wherein said sensor tip fixation domain comprises a capsular attachment layer on said sensor, and wherein said sensor tip fixation domain further comprises an angiogenic layer on said sensor.

67. (Currently amended) The device of claim ~~65~~ 66, wherein said capsular attachment layer is non-smooth.

68. (Previously added) The device of claim 67, wherein said non-smooth layer includes surgical grade polyester velour.

69. (Cancelled)

70. (Currently amended) ~~The device of claim 69~~ An implantable device for subcutaneous monitoring of glucose levels, comprising a housing and a sensor capable of continuous glucose sensing, said sensor including an angiogenic layer for promoting adequate microcirculatory delivery of glucose and oxygen to said sensor, wherein said sensor further includes a capsular attachment layer.

71. (Currently amended) The device of claim ~~69~~ 70, wherein said implantable device is sized and configured for being wholly implanted subcutaneously.

72. (New) The device of claim 29, wherein said sensor comprises an interface tip for communicating with the tissue of said host, said tip comprising a fixation domain adapted for substantial fixation of said tip in a foreign body capsule.

73. (New) The device of claim 72, wherein said wherein said sensor tip fixation domain further comprises a capsular attachment layer.

74. (New) The device of claim 73, wherein said capsular attachment layer comprises a porous implantable material.

75. (New) The device of claim 73, wherein said capsular attachment layer comprises one of polyester, velour, expanded polytetrafluoroethylene, polytetrafluoroethylene felts, and polypropylene cloth.

76. (New) The device of claim 73, wherein said capsular attachment layer is non-smooth.

77. (New) The device of claim 76, wherein said non-smooth capsular attachment layer includes surgical grade polyester velour.

78. (New) The device of claim 29, wherein said bioprotective membrane comprises polytetrafluoroethylene.

79. (New) The device of claim 29, wherein said bioprotective membrane comprises polytetrafluoroethylene.

80. (New) The device of claim 29, wherein said bioprotective membrane and said angiogenic layer are formed from a polytetrafluoroethylene.

81. (New) The device of claim 29, wherein said bioprotective membrane comprises pores having diameter ranging from about 0.1 micron to about 1.0 micron.

82. (New) The device of claim 29, wherein said bioprotective membrane comprises pores having diameter ranging from about 0.2 micron to about 0.5 micron.

83. (New) The device of claim 29, wherein said electronic circuit operably connected to at least one of said electrodes is adapted for continuous, long-term operation.

84. (New) The device of claim 29, wherein said housing further comprises an apparatus operatively connected to said electronic circuit for transmitting data to a location external to said device.

85. (New) The device of claim 84, wherein said data transmitting apparatus comprises radiotelemetry.

86. (New) The device of claim 29, wherein said device is wholly implantable.

87. (New) The device of claim 86, wherein said device is sized and configured for being wholly implantable subcutaneously.

88. (New) The device of claim 29, wherein said housing is substantially oval-shaped.

89. (New) A device for measuring glucose in a biological fluid, comprising:

a) a housing comprising an electronic circuit and at least two electrodes operatively connected to said electronic circuit; and

b) a sensor operably connected to said electrodes of said housing, said sensor comprising an apparatus for determining the amount of glucose in a biological sample, said glucose determining apparatus operably associated with said electrodes and comprising a membrane impregnated with an oxidase, a bioprotective membrane substantially impermeable to macrophages, said bioprotective membrane positioned more distal to said housing than said oxidase impregnated membrane, and an

angiogenic layer positioned more distal to said housing than said bioprotective membrane, wherein the sensor further comprises a sensor interface dome.

90. (New) The device of claim 89, further comprising c) a securing element for securing said device to biological tissue.

91. (New) The device of claim 90, wherein said securing element comprises one of polyester, polypropylene cloth, polytetrafluoroethylene felts and expanded polytetrafluoroethylene.

92. (New) The device of claim 90, wherein said securing element comprises a polyester velour.

93. (New) The device of claim 89, wherein said sensor comprises an interface tip for communicating with the tissue of said host, said tip comprising a fixation domain adapted for substantial fixation of said tip in a foreign body capsule.

94. (New) The device of claim 93, wherein said wherein said fixation domain further comprises a capsular attachment layer.

95. (New) The device of claim 94, wherein said capsular attachment layer comprises a porous implantable material.

96. (New) The device of claim 94, wherein said capsular attachment layer comprises one of polyester, velour, expanded polytetrafluoroethylene, polytetrafluoroethylene felts, and polypropylene cloth.

97. (New) The device of claim 94, wherein said capsular attachment layer is non-smooth.

98. (New) The device of claim 97, wherein said non-smooth capsular attachment layer includes surgical grade polyester velour.

99. (New) The device of claim 89, wherein said angiogenic layer comprises one of hydrophilic polyvinylidene fluoride, mixed cellulose esters, polyvinyl chloride, polypropylene, polysulphone and polymethactylate.

100. (New) The device of claim 89, wherein said bioprotective membrane comprises polytetrafluoroethylene.

101. (New) The device of claim 89, wherein said angiogenic layer comprises polytetrafluoroethylene.

102. (New) The device of claim 89, wherein said bioprotective and angiogenic layers are formed from a polytetrafluoroethylene.

103. (New) The device of claim 89, wherein said bioprotective membrane comprises pores having diameter ranging from about 0.1 micron to about 1.0 micron.

104. (New) The device of claim 103; wherein said bioprotective membrane comprises pores having diameter ranging from about 0.2 micron to about 0.5 micron.

105. (New) The device of claim 89, wherein said bioprotective membrane comprises one of polypropylene, polysulphone, polytetrafluoroethylene, and poly(ethylene terephthalate).

106. (New) The device of claim 89, wherein said oxidase impregnated membrane comprises a single homogeneous structure.

107. (New) The device of claim 89, wherein said oxidase impregnated membrane comprises a resistance layer, and enzyme layer, an interference layer and an electrolyte layer.

108. (New) The device of claim 107, wherein said resistance layer restricts the transport of glucose therethrough.

109. (New) The device of claim 107, wherein said resistance layer comprises a polymer membrane with a oxygen-to-glucose permeability ratio of approximately 200:1.

110. (New) The device of claim 107, wherein said interference layer comprises a hydrophobic membrane substantially permeable to hydrogen peroxide.

111. (New) The device of claim 107, wherein said interference layer comprises a hydrophobic membrane substantially impermeable to chemical compositions having a molecular weight substantially greater than hydrogen peroxide.

112. (New) The device of claim 107, wherein said electrolyte layer comprises a semipermeable hydrophilic coating.

113. (New) The device of claim 112, wherein said electrolyte layer comprises a curable copolymer of a urethane polymer and a hydrophilic film-forming polymer.

114. (New) The device of claim 107, wherein said enzyme layer contains glucose oxidase.

115. (New) The device of claim 89, wherein said housing comprising said electronic circuit is filled with material comprising waxes and resins wherein said waxes and resins secure said electronic circuit within said housing.

116. (New) The device of claim 89, wherein said electronic circuit operably connected to at least one of said electrodes is adapted for continuous, long-term operation.

117. (New) The device of claim 89, wherein said housing further comprises an apparatus operatively connected to said electronic circuit for transmitting data to a location external to said device.

118. (New) The device of claim 117, wherein said data transmitting apparatus comprises radiotelemetry.

119. (New) The device of claim 89, wherein said device is wholly implantable.

120. (New) The device of claim 119, wherein said device is sized and configured for being wholly implantable subcutaneously.

121. (New) The device of claim 89, wherein said housing is substantially oval-shaped.

122. (New) The device of claim 89, wherein said sensor interface dome protrudes from said housing.

123. (New) A device for measuring glucose in a biological fluid, comprising:

a) a housing comprising an electronic circuit and at least two electrodes operatively connected to said electronic circuit; and

b) a sensor operably connected to said electrodes of said housing, said sensor comprising an apparatus for determining the amount of glucose in a biological sample, said glucose determining apparatus operably associated with said electrodes and comprising a membrane impregnated with an oxidase, a bioprotective membrane substantially impermeable to macrophages, said bioprotective membrane positioned more distal to said housing than said oxidase impregnated membrane, and an angiogenic layer positioned more distal to said housing than said bioprotective membrane, wherein said membrane impregnated with oxidase comprises a resistance layer, and enzyme layer, an interference layer and an electrolyte layer.

124. (New) The device of claim 123, further comprising c) a securing element for securing said device to biological tissue.

125. (New) The device of claim 124, wherein said securing element comprises one of polyester, polypropylene cloth, polytetrafluoroethylene felts and expanded polytetrafluoroethylene.

126. (New) The device of claim 124, wherein said securing element comprises a polyester velour.

127. (New) The device of claim 123, wherein said sensor comprises an interface tip for communicating with the tissue of said host, said tip comprising a fixation domain adapted for substantial fixation of said tip in a foreign body capsule.

128. (New) The device of claim 127, wherein said wherein said fixation domain further comprises a capsular attachment layer.

129. (New) The device of claim 128, wherein said capsular attachment layer comprises a porous implantable material.

130. (New) The device of claim 128, wherein said capsular attachment layer comprises one of polyester, velour, expanded polytetrafluoroethylene, polytetrafluoroethylene felts, and polypropylene cloth.

131. (New) The device of claim 128, wherein said capsular attachment layer is non-smooth.

132. (New) The device of claim 131, wherein said non-smooth capsular attachment layer includes surgical grade polyester velour.

133. (New) The device of claim 123, wherein said angiogenic layer comprises one of hydrophilic polyvinylidene fluoride, mixed cellulose esters, polyvinyl chloride, polypropylene, polysulphone and polymethacrylate.

134. (New) The device of claim 123, wherein said bioprotective membrane comprises polytetrafluoroethylene.

135. (New) The device of claim 123, wherein said angiogenic layer comprises polytetrafluoroethylene.

136. (New) The device of claim 123, wherein said bioprotective and angiogenic layers are formed from a polytetrafluoroethylene.

137. (New) The device of claim 123, wherein said bioprotective membrane comprises pores having diameter ranging from about 0.1 micron to about 1.0 micron.

138. (New) The device of claim 137, wherein said bioprotective membrane comprises pores having diameter ranging from about 0.2 micron to about 0.5 micron.

139. (New) The device of claim 123, wherein said bioprotective membrane comprises one of polypropylene, polysulphone, polytetrafluoroethylene, and poly(ethylene terephthalate).

140. (New) The device of claim 123, wherein said oxidase impregnated membrane comprises a single homogeneous structure.

141. (New) The device of claim 123, wherein said resistance layer restricts the transport of glucose therethrough.

142. (New) The device of claim 141, wherein said resistance layer comprises a polymer membrane with a oxygen-to-glucose permeability ratio of approximately 200:1.

143. (New) The device of claim 123, wherein said interference layer comprises a hydrophobic membrane substantially permeable to hydrogen peroxide.

145. (New) The device of claim 143, wherein said interference layer comprises a hydrophobic membrane substantially impermeable to chemical compositions having a molecular weight substantially greater than hydrogen peroxide.

146. (New) The device of claim 123, wherein said electrolyte layer comprises a semipermeable hydrophilic coating.

147. (New) The device of claim 146, wherein said electrolyte layer comprises a curable copolymer of a urethane polymer and a hydrophilic film-forming polymer.

148. (New) The device of claim 123, wherein said enzyme layer contains glucose oxidase.

149. (New) The device of claim 123, wherein said housing comprising said electronic circuit is filled with material comprising waxes and resins wherein said waxes and resins secure said electronic circuit within said housing.

150. (New) The device of claim 123, wherein said electronic circuit operably connected to at least one of said electrodes is adapted for continuous, long-term operation.

151. (New) The device of claim 123, wherein said housing further comprises an apparatus operatively connected to said electronic circuit for transmitting data to a location external to said device.

152. (New) The device of claim 151, wherein said data transmitting apparatus comprises radiotelemetry.

153. (New) The device of claim 123, wherein said device is wholly implantable.

154. (New) The device of claim 153, wherein said device is sized and configured for being wholly implantable subcutaneously.

155. (New) The device of claim 123, wherein said housing is substantially oval-shaped.

156. (New) The device of claim 123, wherein said sensor further comprises a sensor interface dome that protrudes from said housing.

157. (New) A device for measuring glucose in a biological fluid, comprising:

a) a housing comprising an electronic circuit and at least two electrodes operatively connected to said electronic circuit;

b) a sensor operably connected to said electrodes of said housing, said sensor comprising an apparatus for determining the amount of glucose in a biological sample, said glucose determining apparatus operably associated with said electrodes and comprising a membrane impregnated with an oxidase, a bioprotective membrane substantially impermeable to macrophages, said bioprotective membrane positioned more distal to said housing than said oxidase impregnated membrane, and an angiogenic layer positioned more distal to said housing than said bioprotective membrane,

c) a securing element for securing said device to biological tissue, said securing element composed of a material selected from the group consisting of polyester, polypropylene cloth, polytetrafluoroethylene felts and expanded polytetrafluoroethylene.

158. (New) The device of claim 157, wherein said securing element comprises a polyester velour.

159. (New) The device of claim 157, wherein said sensor comprises an interface tip for communicating with the tissue of said host, said tip comprising a fixation domain adapted for substantial fixation of said tip in a foreign body capsule.

160. (New) The device of claim 159, wherein said wherein said fixation domain further comprises a capsular attachment layer.

161. (New) The device of claim 160, wherein said capsular attachment layer comprises a porous implantable material.

162. (New) The device of claim 160, wherein said capsular attachment layer comprises one of polyester, velour, expanded polytetrafluoroethylene, polytetrafluoroethylene felts, and polypropylene cloth.

163. (New) The device of claim 160, wherein said capsular attachment layer is non-smooth.

164. (New) The device of claim 161, wherein said non-smooth capsular attachment layer includes surgical grade polyester velour.

165. (New) The device of claim 157, wherein said angiogenic layer comprises one of hydrophilic polyvinylidene fluoride, mixed cellulose esters, polyvinyl chloride, polypropylene, polysulphone and polymethacrylate.

166. (New) The device of claim 157, wherein said bioprotective membrane comprises polytetrafluoroethylene.

167. (New) The device of claim 157, wherein said angiogenic layer comprises polytetrafluoroethylene.

168. (New) The device of claim 157, wherein said bioprotective and angiogenic layers are formed from a polytetrafluoroethylene.

169. (New) The device of claim 157, wherein said bioprotective membrane comprises pores having diameter ranging from about 0.1 micron to about 1.0 micron.

170. (New) The device of claim 169, wherein said bioprotective membrane comprises pores having diameter ranging from about 0.2 micron to about 0.5 micron.

171. (New) The device of claim 157, wherein said bioprotective membrane comprises one of polypropylene, polysulphone, polytetrafluoroethylene, and poly(ethylene terephthalate).

172. New) The device of claim 157, wherein said oxidase impregnated membrane comprises a resistance layer, and enzyme layer, an interference layer and an electrolyte layer.

173. (New) The device of claim 172, wherein said oxidase impregnated membrane comprises a single homogeneous structure.

174. (New) The device of claim 172, wherein said resistance layer restricts the transport of glucose therethrough.

175. (New) The device of claim 174, wherein said resistance layer comprises a polymer membrane with a oxygen-to-glucose permeability ratio of approximately 200:1.

176. (New) The device of claim 172, wherein said interference layer comprises a hydrophobic membrane substantially permeable to hydrogen peroxide.

177. (New) The device of claim 176, wherein said interference layer comprises a hydrophobic membrane substantially impermeable to chemical compositions having a molecular weight substantially greater than hydrogen peroxide.

178. (New) The device of claim 172, wherein said electrolyte layer comprises a semipermeable hydrophilic coating.

179. (New) The device of claim 178, wherein said electrolyte layer comprises a curable copolymer of a urethane polymer and a hydrophilic film-forming polymer.

180. (New) The device of claim 172, wherein said enzyme layer contains glucose oxidase.

181. (New) The device of claim 157, wherein said housing comprising said electronic circuit is filled with material comprising waxes and resins wherein said waxes and resins secure said electronic circuit within said housing.

182. (New) The device of claim 157, wherein said electronic circuit operably connected to at least one of said electrodes is adapted for continuous, long-term operation.

183. (New) The device of claim 157, wherein said housing further comprises an apparatus operatively connected to said electronic circuit for transmitting data to a location external to said device.

184. (New) The device of claim 183, wherein said data transmitting apparatus comprises radiotelemetry.

185. (New) The device of claim 157, wherein said device is wholly implantable.

186. (New) The device of claim 185, wherein said device is sized and configured for being wholly implantable subcutaneously.

187. (New) The device of claim 157, wherein said housing is substantially oval-shaped.

188. (New) The device of claim 157, wherein said sensor further comprises a sensor interface dome that protrudes from said housing.

189. (New) A biological fluid measuring device, comprising:

a) a housing comprising an electronic circuit and at least two electrodes operably connected to said electronic circuit; and

b) a sensor operably connected to said electrodes of said housing, said sensor comprising (i) a bioprotective membrane, and (ii) an angiogenic layer, said angiogenic layer positioned more distal to said housing than said bioprotective membrane; and

c) a member for securing said device to biological tissue, and securing member associated with said housing.

190. (New) The device of claim 189, wherein said securing element comprises one of a material selected from the group consisting of polyester, polypropylene cloth, polytetrafluoroethylene felts and expanded polytetrafluoroethylene.

191. (New) The device of claim 190, wherein said securing element comprises a polyester velour.

192. (New) The device of claim 189, wherein said sensor comprises an interface tip for communicating with the tissue of said host, said tip comprising a fixation domain adapted for substantial fixation of said tip in a foreign body capsule.

193. (New) The device of claim 192, wherein said wherein said fixation domain further comprises a capsular attachment layer.

194. (New) The device of claim 193, wherein said capsular attachment layer comprises a porous implantable material.

195. (New) The device of claim 193, wherein said capsular attachment layer comprises one of polyester, velour, expanded polytetrafluoroethylene, polytetrafluoroethylene felts, and polypropylene cloth.

196. (New) The device of claim 193, wherein said capsular attachment layer is non-smooth.

197. (New) The device of claim 196, wherein said non-smooth capsular attachment layer includes surgical grade polyester velour.

198. (New) The device of claim 189, wherein said angiogenic layer comprises one of hydrophilic polyvinylidene fluoride, mixed cellulose esters, polyvinyl chloride, polypropylene, polysulphone and polymethacrylate.

199. (New) The device of claim 189, wherein said bioprotective membrane comprises polytetrafluoroethylene.

200. (New) The device of claim 189, wherein said angiogenic layer comprises polytetrafluoroethylene.

201. (New) The device of claim 189, wherein said bioprotective and angiogenic layers are formed from a polytetrafluoroethylene.

202. (New) The device of claim 190, wherein said bioprotective membrane comprises pores having diameter ranging from about 0.1 micron to about 1.0 micron.

203. (New) The device of claim 202, wherein said bioprotective membrane comprises pores having diameter ranging from about 0.2 micron to about 0.5 micron.

204. (New) The device of claim 189, wherein said bioprotective membrane comprises one of polypropylene, polysulphone, polytetrafluoroethylene, and poly(ethylene terephthalate).

205. (New) The device of claim 189, wherein said oxidase impregnated membrane comprises a resistance layer, and enzyme layer, an interference layer and an electrolyte layer.

206. (New) The device of claim 205, wherein said oxidase impregnated membrane comprises a single homogeneous structure.

207. (New) The device of claim 205, wherein said resistance layer restricts the transport of glucose therethrough.

208. (New) The device of claim 207, wherein said resistance layer comprises a polymer membrane with a oxygen-to-glucose permeability ratio of approximately 200:1.

209. (New) The device of claim 205, wherein said interference layer comprises a hydrophobic membrane substantially permeable to hydrogen peroxide.

210. (New) The device of claim 209, wherein said interference layer comprises a hydrophobic membrane substantially impermeable to chemical compositions having a molecular weight substantially greater than hydrogen peroxide.

211. (New) The device of claim 205, wherein said electrolyte layer comprises a semipermeable hydrophilic coating.

212. (New) The device of claim 211, wherein said electrolyte layer comprises a curable copolymer of a urethane polymer and a hydrophilic film-forming polymer.

213. (New) The device of claim 205, wherein said enzyme layer contains glucose oxidase.

214. (New) The device of claim 189, wherein said housing comprising said electronic circuit is filled with material comprising waxes and resins wherein said waxes and resins secure said electronic circuit within said housing.

215. (New) The device of claim 189, wherein said electronic circuit operably connected to at least one of said electrodes is adapted for continuous, long-term operation.

216. (New) The device of claim 189, wherein said housing further comprises an apparatus operatively connected to said electronic circuit for transmitting data to a location external to said device.

217. (New) The device of claim 216, wherein said data transmitting apparatus comprises radiotelemetry.

218. (New) The device of claim 217, wherein said device is wholly implantable.

219. (New) The device of claim 218, wherein said device is sized and configured for being wholly implantable subcutaneously.

220. (New) The device of claim 189, wherein said housing is substantially oval-shaped.

221. (New) The device of claim 189, wherein said sensor further comprises a sensor interface dome that protrudes from said housing.

222. (New) The device of claim 66, further comprising a securing element for securing said device to biological tissue.

223. (New) The device of claim 222, wherein said securing element comprises one of polyester, polypropylene cloth, polytetrafluoroethylene felts and expanded polytetrafluoroethylene.

224. (New) The device of claim 223, wherein said securing element comprises a polyester velour.

225. (New) The device of claim 66, wherein said capsular attachment layer comprises a porous implantable material.

226. (New) The device of claim 66, wherein said capsular attachment layer comprises one of polyester, velour, expanded polytetrafluoroethylene, polytetrafluoroethylene felts, and polypropylene cloth.

227. (New) The device of claim 66, wherein said angiogenic layer comprises one of hydrophilic polyvinylidene fluoride, mixed cellulose esters, polyvinyl chloride, polypropylene, polysulphone and polymethacrylate.

228. (New) The device of claim 66, wherein said angiogenic layer comprises polytetrafluoroethylene.

229. (New) The device of claim 66, further comprising a bioprotective membrane substantially impermeable to macrophages, said bioprotective membrane located proximal to said angiogenic layer.

230. (New) The device of claim 229, wherein said bioprotective membrane comprises polytetrafluoroethylene.

231. (New) The device of claim 229, wherein said bioprotective and angiogenic layers are formed from a polytetrafluoroethylene.

232. (New) The device of claim 229, wherein said bioprotective membrane comprises pores having diameter ranging from about 0.1 micron to about 1.0 micron.

233. (New) The device of claim 229, wherein said bioprotective membrane comprises pores having diameter ranging from about 0.2 micron to about 0.5 micron.

234. (New) The device of claim 229, wherein said bioprotective membrane comprises one of polypropylene, polysulphone, polytetrafluoroethylene, and poly(ethylene terephthalate).

234. (New) The device of claim 66, further comprising a membrane impregnated with an oxidase located proximal to said angiogenic layer.

235. (New) The device of claim 234, wherein said oxidase impregnated membrane comprises a resistance layer, and enzyme layer, an interference layer and an electrolyte layer.

236. (New) The device of claim 235, wherein said oxidase impregnated membrane comprises a single homogeneous structure.

237. (New) The device of claim 235, wherein said resistance layer restricts the transport of glucose therethrough.

238. (New) The device of claim 237, wherein said resistance layer comprises a polymer membrane with a oxygen-to-glucose permeability ratio of approximately 200:1.

239. (New) The device of claim 235, wherein said interference layer comprises a hydrophobic membrane substantially permeable to hydrogen peroxide.

240. (New) The device of claim 239, wherein said interference layer comprises a hydrophobic membrane substantially impermeable to chemical compositions having a molecular weight substantially greater than hydrogen peroxide.

241. (New) The device of claim 235, wherein said electrolyte layer comprises a semipermeable hydrophilic coating.

242. (New) The device of claim 241, wherein said electrolyte layer comprises a curable copolymer of a urethane polymer and a hydrophilic film-forming polymer.

243. (New) The device of claim 235, wherein said enzyme layer contains glucose oxidase.

244. (New) The device of claim 66, further comprising a housing that has an electronic circuit and at least two electrodes operatively connected to said electronic circuit, wherein said sensor is operably connected to said electrodes of said housing.

245. (New) The device of claim 244, wherein said housing comprising said electronic circuit is filled with material comprising waxes and resins wherein said waxes and resins secure said electronic circuit within said housing.

246. (New) The device of claim 244, wherein said electronic circuit operably connected to at least one of said electrodes is adapted for continuous, long-term operation.

247. (New) The device of claim 244, wherein said housing further comprises an apparatus operatively connected to said electronic circuit for transmitting data to a location external to said device.

248. (New) The device of claim 247, wherein said data transmitting apparatus comprises radiotelemetry.

249. (New) The device of claim 66, wherein said device is sized and configured for being wholly implantable subcutaneously.

250. (New) The device of claim 66, wherein said housing is substantially oval-shaped.

251. (New) The device of claim 66, wherein said sensor interface tip comprises a dome configuration.

252. (New) The device of claim 244, wherein said sensor interface tip protrudes from said housing.

253. (New) A device for measuring glucose in a tissue of a host comprising a wholly implantable device comprising a sensor capable of continuous glucose sensing, said sensor having an interface tip for communicating with the tissue of said host, said tip comprising a fixation domain adapted for substantial fixation of said tip in a foreign body capsule, wherein said sensor tip fixation domain further comprises a non-smooth capsular attachment layer made from surgical grade polyester velour on said sensor.

254. (New) The device of claim 253, further comprising a securing element for securing said device to biological tissue.

255. (New) The device of claim 254, wherein said securing element comprises one of polyester, polypropylene cloth, polytetrafluoroethylene felts and expanded polytetrafluoroethylene.

256. (New) The device of claim 254, wherein said securing element comprises a polyester velour.

257. (New) The device of claim 253, wherein said sensor tip fixation domain further comprises an angiogenic layer on said sensor.

258. (New) The device of claim 257, wherein said angiogenic layer comprises one of hydrophilic polyvinylidene fluoride, mixed cellulose esters, polyvinyl chloride, polypropylene, polysulphone and polymethacrylate.

259. (New) The device of claim 257, wherein said angiogenic layer comprises polytetrafluoroethylene.

260. (New) The device of claim 257, further comprising a bioprotective membrane substantially impermeable to macrophages, said bioprotective membrane located proximal to said angiogenic layer.

261. (New) The device of claim 260, wherein said bioprotective membrane comprises polytetrafluoroethylene.

262. (New) The device of claim 260, wherein said bioprotective and angiogenic layers are formed from a polytetrafluoroethylene.

263. (New) The device of claim 260, wherein said bioprotective membrane comprises pores having diameter ranging from about 0.1 micron to about 1.0 micron.

264. (New) The device of claim 263, wherein said bioprotective membrane comprises pores having diameter ranging from about 0.2 micron to about 0.5 micron.

265. (New) The device of claim 260, wherein said bioprotective membrane comprises one of polypropylene, polysulphone, polytetrafluoroethylene, and poly(ethylene terephthalate).

266. (New) The device of claim 253, said sensor further comprising a membrane impregnated with an oxidase.

267. (New) The device of claim 266, wherein said oxidase impregnated membrane comprises a resistance layer, and enzyme layer, an interference layer and an electrolyte layer.

268. (New) The device of claim 267, wherein said oxidase impregnated membrane comprises a single homogeneous structure.

269. (New) The device of claim 267, wherein said resistance layer restricts the transport of glucose therethrough.

270. (New) The device of claim 269, wherein said resistance layer comprises a polymer membrane with a oxygen-to-glucose permeability ratio of approximately 200:1.

271. (New) The device of claim 267, wherein said interference layer comprises a hydrophobic membrane substantially permeable to hydrogen peroxide.

272. (New) The device of claim 271, wherein said interference layer comprises a hydrophobic membrane substantially impermeable to chemical compositions having a molecular weight substantially greater than hydrogen peroxide.

273. (New) The device of claim 267, wherein said electrolyte layer comprises a semipermeable hydrophilic coating.

274. (New) The device of claim 273, wherein said electrolyte layer comprises a curable copolymer of a urethane polymer and a hydrophilic film-forming polymer.

275. (New) The device of claim 267, wherein said enzyme layer contains glucose oxidase.

276. (New) The device of claim 253, further comprising a housing that has an electronic circuit and at least two electrodes operatively connected to said electronic circuit, wherein said sensor is operably connected to said electrodes of said housing.

277. (New) The device of claim 276, wherein said housing comprising said electronic circuit is filled with material comprising waxes and resins wherein said waxes and resins secure said electronic circuit within said housing.

278. (New) The device of claim 276, wherein said electronic circuit operably connected to at least one of said electrodes is adapted for continuous, long-term operation.

279. (New) The device of claim 276, wherein said housing further comprises an apparatus operatively connected to said electronic circuit for transmitting data to a location external to said device.

280. (New) The device of claim 279, wherein said data transmitting apparatus comprises radiotelemetry.

281. (New) The device of claim 253, wherein said device is sized and configured for being wholly implantable subcutaneously.

282. (New) The device of claim 253, wherein said housing is substantially oval-shaped.

283. (New) The device of claim 253, wherein said sensor interface tip comprises a dome configuration.

284. (New) The device of claim 253, wherein said sensor interface tip protrudes from said housing.

285. (New) The device of claim 70, further comprising a securing element for securing said device to biological tissue.

286. (New) The device of claim 285, wherein said securing element comprises one of polyester, polypropylene cloth, polytetrafluoroethylene felts and expanded polytetrafluoroethylene.

287. (New) The device of claim 285, wherein said securing element comprises a polyester velour.

288. (New) The device of claim 70, wherein said angiogenic layer comprises one of hydrophilic polyvinylidene fluoride, mixed cellulose esters, polyvinyl chloride, polypropylene, polysulphone and polymethacrylate.

289. (New) The device of claim 70, wherein said angiogenic layer comprises polytetrafluoroethylene.

290. (New) The device of claim 70, further comprising a bioprotective membrane substantially impermeable to macrophages, said bioprotective membrane located proximal to said angiogenic layer.

291. (New) The device of claim 290, wherein said bioprotective membrane comprises polytetrafluoroethylene.

292. (New) The device of claim 290, wherein said bioprotective and angiogenic layers are formed from a polytetrafluoroethylene.

293. (New) The device of claim 290, wherein said bioprotective membrane comprises pores having diameter ranging from about 0.1 micron to about 1.0 micron.

294. (New) The device of claim 293, wherein said bioprotective membrane comprises pores having diameter ranging from about 0.2 micron to about 0.5 micron.

295. (New) The device of claim 290, wherein said bioprotective membrane comprises one of polypropylene, polysulphone, polytetrafluoroethylene, and poly(ethylene terephthalate).

296. (New) The device of claim 70, said sensor further comprising a membrane impregnated with an oxidase.

297. (New) The device of claim 296, wherein said oxidase impregnated membrane comprises a resistance layer, and enzyme layer, an interference layer and an electrolyte layer.

298. (New) The device of claim 296, wherein said oxidase impregnated membrane comprises a single homogeneous structure.

299. (New) The device of claim 297, wherein said resistance layer restricts the transport of glucose therethrough.

300. (New) The device of claim 299, wherein said resistance layer comprises a polymer membrane with a oxygen-to-glucose permeability ratio of approximately 200:1.

301. (New) The device of claim 297, wherein said interference layer comprises a hydrophobic membrane substantially permeable to hydrogen peroxide.

302. (New) The device of claim 301, wherein said interference layer comprises a hydrophobic membrane substantially impermeable to chemical compositions having a molecular weight substantially greater than hydrogen peroxide.

303. (New) The device of claim 297, wherein said electrolyte layer comprises a semipermeable hydrophilic coating.

304. (New) The device of claim 303, wherein said electrolyte layer comprises a curable copolymer of a urethane polymer and a hydrophilic film-forming polymer.

305. (New) The device of claim 297, wherein said enzyme layer contains glucose oxidase.

306. (New) The device of claim 70, wherein said housing comprises an electronic circuit and at least two electrodes operatively connected to said electronic circuit, and wherein said sensor is operably connected to said electrodes of said housing.

307. (New) The device of claim 306, wherein said housing comprising said electronic circuit is filled with material comprising waxes and resins wherein said waxes and resins secure said electronic circuit within said housing.

308. (New) The device of claim 306, wherein said electronic circuit operably connected to at least one of said electrodes is adapted for continuous, long-term operation.

309. (New) The device of claim 70, wherein said housing comprises an apparatus operatively connected to said electronic circuit for transmitting data to a location external to said device.

310. (New) The device of claim 309, wherein said data transmitting apparatus comprises radiotelemetry.

311. (New) The device of claim 70, wherein said device is sized and configured for being wholly implantable subcutaneously.

312. (New) The device of claim 70, wherein said housing is substantially oval-shaped.

313. (New) The device of claim 70, wherein said sensor comprises an interface tip that has a dome configuration.

314. (New) The device of claim 313, wherein said interface tip protrudes from said housing.

315. (New) The device of claim 47, wherein said sensor comprises an interface tip for communicating with the tissue of said host, said tip comprising a fixation domain adapted for substantial fixation of said tip in a foreign body capsule.

316. (New) The device of claim 315, wherein said wherein said fixation domain further comprises a capsular attachment layer.

317. (New) The device of claim 316, wherein said capsular attachment layer comprises a porous implantable material.

318. (New) The device of claim 316, wherein said capsular attachment layer comprises one of polyester, velour, expanded polytetrafluoroethylene, polytetrafluoroethylene felts, and polypropylene cloth.

319. (New) The device of claim 316, wherein said capsular attachment layer is non-smooth.

320. (New) The device of claim 319, wherein said non-smooth capsular attachment layer includes surgical grade polyester velour.

321. (New) The device of claim 47, further comprising an angiogenic layer positioned more distal to said housing than said bioprotective membrane

322. (New) The device of claim 321, wherein said angiogenic layer comprises one of hydrophilic polyvinylidene fluoride, mixed cellulose esters, polyvinyl chloride, polypropylene, polysulphone and polymethacrylate.

323. (New) The device of claim 321, wherein said angiogenic layer comprises polytetrafluoroethylene.

324. (New) The device of claim 321, wherein said bioprotective and angiogenic layers are formed from a polytetrafluoroethylene.

325. (New) The device of claim 47, wherein said bioprotective membrane comprises one of polypropylene, polysulphone, polytetrafluoroethylene, and poly(ethylene terephthalate).

326. (New) The device of claim 48, wherein said oxidase impregnated membrane comprises a single homogeneous structure.

327. (New) The device of claim 48, wherein said glucose oxidase impregnated membrane comprises a resistance layer, and enzyme layer, an interference layer and an electrolyte layer.

328. (New) The device of claim 327, wherein said resistance layer restricts the transport of glucose therethrough.

329. (New) The device of claim 328, wherein said resistance layer comprises a polymer membrane with a oxygen-to-glucose permeability ratio of approximately 200:1.

330. (New) The device of claim 327, wherein said interference layer comprises a hydrophobic membrane substantially permeable to hydrogen peroxide.

331. (New) The device of claim 330, wherein said interference layer comprises a hydrophobic membrane substantially impermeable to chemical compositions having a molecular weight substantially greater than hydrogen peroxide.

332. (New) The device of claim 327, wherein said electrolyte layer comprises a semipermeable hydrophilic coating.

333. (New) The device of claim 332, wherein said electrolyte layer comprises a curable copolymer of a urethane polymer and a hydrophilic film-forming polymer.

334. (New) The device of claim 50, wherein said housing comprising said electronic circuitry is filled with material comprising waxes and resins wherein said waxes and resins secure said electronic circuit within said housing.

335. (New) The device of claim 50, wherein said housing further comprises an apparatus operatively connected to said electronic circuitry for transmitting data to a location external to said device.

336. (New) The device of claim 335, wherein said data transmitting apparatus comprises radiotelemetry.

337. (New) The device of claim 47, wherein said device is sized and configured for being wholly implantable subcutaneously.

338. (New) The device of claim 47, wherein said housing is substantially oval-shaped.

339. (New) The device of claim 47, wherein said sensor further comprises a sensor interface dome that protrudes from said housing.

340. (New) The device of claim 58, wherein said securing member comprises one of polyester, polypropylene cloth, polytetrafluoroethylene felts and expanded polytetrafluoroethylene.

341. (New) The device of claim 58, wherein said securing member comprises a polyester velour.

342. (New) The device of claim 57, wherein said sensor further comprises an interface tip for communicating with the tissue of said host, said tip comprising a fixation domain adapted for substantial fixation of said tip in a foreign body capsule.

343. (New) The device of claim 342, wherein said wherein said sensor tip fixation domain further comprises a capsular attachment layer.

344. (New) The device of claim 343, wherein said capsular attachment layer comprises a porous implantable material.

345. (New) The device of claim 343, wherein said capsular attachment layer comprises one of polyester, velour, expanded polytetrafluoroethylene, polytetrafluoroethylene felts, and polypropylene cloth.

346. (New) The device of claim 343, wherein said capsular attachment layer is non-smooth.

347. (New) The device of claim 346, wherein said non-smooth capsular attachment layer includes surgical grade polyester velour.

348. (New) The device of claim 57, wherein said bioprotective membrane comprises one of polypropylene, polysulphone, polytetrafluoroethylene, and poly(ethylene terephthalate).

349. (New) The device of claim 61, wherein said glucose oxidase-containing membrane comprises a resistance layer, and enzyme layer, an interference layer and an electrolyte layer.

350. (New) The device of claim 349, wherein said resistance layer restricts the transport of glucose therethrough.

351. (New) The device of claim 350, wherein said resistance layer comprises a polymer membrane with a oxygen-to-glucose permeability ratio of approximately 200:1.

352. (New) The device of claim 349, wherein said interference layer comprises a hydrophobic membrane substantially permeable to hydrogen peroxide.

353. (New) The device of claim 352, wherein said interference layer comprises a hydrophobic membrane substantially impermeable to chemical compositions having a molecular weight substantially greater than hydrogen peroxide.

354. (New) The device of claim 349, wherein said electrolyte layer comprises a semipermeable hydrophilic coating.

355. (New) The device of claim 354, wherein said electrolyte layer comprises a curable copolymer of a urethane polymer and a hydrophilic film-forming polymer.

356. (New) The device of claim 61, wherein said glucose oxidase-containing membrane comprises a single homogeneous structure.

357. (New) The device of claim 57, wherein said housing comprising said electronic circuit is filled with material comprising waxes and resins wherein said waxes and resins secure said electronic circuit within said housing.

358. (New) The device of claim 57, wherein said electronic circuit operably connected to said at least two electrodes is adapted for continuous, long-term operation.

359. (New) The device of claim 62, wherein said data transmitting apparatus comprises radiotelemetry.

360. (New) The device of claim 57, wherein said device is wholly implantable.

361. (New) The device of claim 360, wherein said device is sized and configured for being wholly implantable subcutaneously.

362. (New) The device of claim 57, wherein said housing is substantially oval-shaped.

363. (New) The device of claim 57, wherein said sensor further comprises a sensor interface dome that protrudes from said housing.